

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for *Polystichum aleuticum*

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Fish and Wildlife Service (Service) determines that *Polystichum aleuticum* (Aleutian shield-fern), a perennial known from only two locations in the Aleutian Islands, Alaska, is an endangered species under the authority of the Endangered Species Act (Act) of 1973, as amended. This species is endangered due to its extreme rarity. Mortality from habitat loss due to wind erosion and soil movement, collecting for scientific and educational purposes, and, possibly, grazing and trampling by introduced ungulates have contributed to its rarity. This rule provides protection and recovery provisions afforded by the Act to *Polystichum aleuticum*.

EFFECTIVE DATE: March 18, 1988.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement Field Office, 411 West Fourth Avenue, Suite 2B, Anchorage, Alaska 99501.

FOR FURTHER INFORMATION CONTACT: Mr. Michael Amaral (see **ADDRESSES** section) at 907/271-4575 or FTS 271-4575.

SUPPLEMENTARY INFORMATION:

Background

Polystichum aleuticum (family Polypodiaceae) is a small, tufted fern, about 150 millimeters (6 inches) tall, and arises from a stout, dark brown rhizome with brown scales and numerous chestnut-brown remains of frond bases (Murray 1980). The small, simply-pinnate fronds (leaves) with spiny-toothed pinnae (segments) and distinctive chestnut-brown stipe bases readily distinguish *P. aleuticum* from all other ferns in the Aleutian Islands (Lipkin 1985).

Until recently, *P. aleuticum* was known only from the original collection made by Eyerdam in 1932, who reported its location as Atka Island in the Aleutians (Hulten 1936). Based on Eyerdam's collections, Christensen published a description of the species in

1938. In 1975, D.K. Smith discovered a second population of 15 plants on Mt. Reed, Adak Island, about 160 kilometers (100 miles) west of Atka. The species was not observed in the wild again until 1987, when Smith returned to Mt. Reed on Adak Island and found a population of seven individuals.

This species is known only from these two locations in the Andreanof Island group of the Aleutian Islands, Alaska. It is a very well-marked and extremely narrow endemic without close relatives in North America or northern Asia (Wagner 1979). Its presence in only the Andreanof Island group, which formed a single, large island during maximum glaciation, suggests it may be a relict species that survived on a nunatak or refugium (Lipkin 1985). It apparently has not expanded its range. Smith (1985) describes *P. aleuticum* as among the most restricted and rarest ferns of North America.

In 1975, *P. aleuticum* was found on Adak Island in a north-facing rock outcrop below the summit of the 590 meter (1,936 foot) Mt. Reed. The site consists of treeless, alpine talus slopes that are vegetated with low-growing herbs and prostrate shrubs. No information is available on the location or the status of the Atka population collected by Eyerdam in 1932 other than his annotation, "very rare" (Lipkin 1985). Efforts by Friedman (1984) and Lipkin (1985) to relocate the Atka population were unsuccessful. Despite intensive searching by R. Lipkin and S. Talbot, no plants were seen on Adak in 1984, 1985, or 1986. D.K. Smith returned to Adak Island in 1987, and although he was unable to find *P. aleuticum* in the location of his 1985 collection, a clump of six viable and one uprooted shield-ferns were found a short distance away. These six plants, in an area about 3 m by 3 m square, comprise the total known extant population for this species. Natural mortality due to habitat instability and depletion by collection are documented causes for the loss of individuals. Grazing or trampling by introduced ungulates may also have contributed to the rarity of this species.

Federal Government actions on this species began with section 12 of the Endangered Species Act of 1973 (Act), which directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. This report, designated as House Document No. 94-51, was presented to Congress on January 9, 1975. On July 1, 1975, the Service published a notice in the *Federal Register* (40 FR 27823) of its acceptance of the Smithsonian Institution report as

a petition within the context of section 4(c)(2) of the Act (petition acceptance is now governed by section 4(b)(3)(A) of the Act), and of its intention thereby to review the status of the plant taxa named therein. On June 16, 1976, the Service published a proposed rule in the *Federal Register* (41 FR 24523) to determine approximately 1,700 vascular plant species to be endangered species pursuant to section 4 of the Act. The list of 1,700 plant taxa was assembled on the basis of comments and data received by the Smithsonian Institution and the Service in response to House Document No. 94-51 and the July 1, 1975, *Federal Register* publication.

Polystichum aleuticum was included in the Smithsonian petition and the June 16, 1976, proposal. General comments received in relation to the 1976 proposal were summarized in the *Federal Register* on April 26, 1978 (43 FR 17909).

The Endangered Species Act Amendments of 1978 required that all proposals over two years old be withdrawn. On December 10, 1979, the Service published a notice (44 FR 70796) withdrawing the June 16, 1976, proposal along with four other proposals that had expired. On December 15, 1980, the Service published a revised notice of review for native plants in the *Federal Register* (45 FR 82480); *Polystichum aleuticum* was included in that notice and in the Service's updated plant notice of September 27, 1985 (50 FR 39526).

Summary of Comments and Recommendations

In the April 24, 1987, proposed rule and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State and Federal agencies, a native corporation and village council, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice was published in *The Aleutian Times* (May 8, 1987), the *Anchorage Daily News* (May 1, 1987), the *Tundra Times* (May 11, 1987), and *The Eagle's Call* (May 8, 1987), all of which invited general public comment.

During the 60-day comment period, a total of 13 written comments on listing were received. No requests for a public hearing were submitted. Of the 12 comments that stated a position on listing, 11 supported the proposed action and one suggested deferring listing until surveys were conducted on islands near Adak and Atka. Support for the listing proposal was voiced by six State and Federal agencies, two university

professors, the Curator of Ferns at the National Herbarium in Washington, DC, and two other interested parties.

Although the Department of the Navy, Western Division Naval Facilities Engineering Command, did not oppose listing, they felt that islands near Adak and Atka should be investigated for the presence of the shield-fern prior to listing. The Navy also expressed concern that the causes for the shield-fern's rarity are apparently unknown. While the Service acknowledges the desirability of additional surveys on Adak, Atka, and intervening islands, the Aleutian Islands are not a botanical terra incognita. On the contrary, the Aleutian archipelago is one of the more botanically well known areas in Alaska and individuals most knowledgeable about Aleutian flora are confident that *Polystichum aleuticum* is an extremely rare endemic. Smith (1985 and 1987) describes the Aleutian shield-fern as unquestionably one of the rarest plants in North America. Although the causes for the rarity of this species are unknown, Smith (1987) and others (Hulten 1960 and Lipkin 1985) speculate that it is a relict of an earlier floristic period and past glacial episodes have isolated populations in the central Aleutian district. Today, pocket populations of the shield-fern probably persist but evidently have not prospered in the central Aleutian Islands, and may be sufficiently separated to prevent gene flow (Smith 1987). The Service agrees that additional intensive surveys will probably identify new populations of *Polystichum aleuticum* but that it will remain an extremely rare species.

Section 4 of the Endangered Species Act and regulations implementing this section specify that a species shall be listed on the basis of the best scientific and commercial data available after conducting a review of them status of the species. Implicit in this standard is that all existing data should be reviewed and that these data convincingly support the proposed action. The standard does not imply that exhaustive studies or data are required or that all potential habitat is surveyed. To do so could delay listing actions beyond the point of recovery for numerous species.

Summary of Factors Affecting the Species

After a thorough review and consideration of all information available, the Service has determined that the Aleutian shield-fern (*Polystichum aleuticum*) should be classified as an endangered species. Procedures found at section 4(a)(1) of the Endangered Species Act (16 U.S.C.

1531 *et seq.*) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act were followed. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to *Polystichum aleuticum* C. Chr. (Aleutian shield-fern) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* The Mt. Reed site on Adak Island lies within the Adak Naval Air Station and the Alaska Maritime National Wildlife Refuge. No present or anticipated development is likely to alter this site or similar alpine habitats on Adak Island. Mt. Reed is accessible to hunters and hikers. There is a well-worn trail along the ridge on the north peak but a remote threat to the fern exists only if hikers stray from the established trail and attempt a difficult traverse of the mountain face. Atka Island is partially in private ownership (Atxam Native Corporation) and partially public land administered by the Service as a National Wildlife Refuge. Proper protection and management plans are needed for all sites containing populations of the fern so that it is not inadvertently disturbed or destroyed.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* Taking for commercial or recreational purposes has not been a documented factor in the decline of this species. However, taking for scientific and educational purposes has reduced the population, and, given its extreme rarity, collecting could pose a further threat in the future.

C. *Disease or predation.* Caribou were introduced to Adak Island in 1958, and 250-400 animals now occur on the island. Although the Mt. Reed site is inaccessible, caribou could browse the fern elsewhere on the island where it may occur as yet undiscovered. C.F. Zeilemaker, former Refuge Manager on Adak, reports that reindeer, introduced to Atka Island in 1914, have overgrazed the west end of that island. The exact location of *Polystichum* on Atka has not been confirmed; however, Service personnel are researching collection records of deceased botanists, who originally located the plant on Atka.

D. *The inadequacy of existing regulatory mechanisms.* The State of Alaska does not have specific legislation or regulations to protect endangered or threatened plant species, although a list of rare State plants exists. All plants occurring on National Wildlife Refuges are protected from collecting (50 CFR 27.51); therefore, *P.*

aleuticum occurring within the Alaska Maritime National Wildlife Refuge is protected by this prohibition, to the extent it is enforceable. The Act would enhance existing protection through section 7 (interagency cooperation), and section 9, which further prohibits removal from Federal lands and reduction to possession, and restricts interstate commercial activity.

E. *Other natural or manmade factors affecting its continued existence.* The Mt. Reed population is of critically small size and its alpine environment is unstable. Several hundred seismic events a year are recorded for Adak Island by the Alaska Tsunami Warning Center. The frequent earthquakes in the geologically active Aleutian chain could destabilize the rock outcrops supporting the Mt. Reed population. Soil movement (solifluction) or substrate release accounted for the mortality of one of the seven specimens observed by D.K. Smith in 1987. Climatic cycles or events may further affect the vigor, spore production and success of this small population. Curious individuals or botanists visiting the Mt. Reed site could unintentionally disturb the fragile vegetation supporting the slope below the fern outcrop. Increased foot traffic could degrade this vegetation and lead to irreversible mass-wasting of the rubble slope and outcrop (Smith 1987). The fern's diminutive size, small gene pool, and highly restricted distribution all contribute to its susceptibility to inadvertent destruction.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by this species in determining to make this rule final. Based on this evaluation, the preferred action is to list *Polystichum aleuticum* as endangered, without critical habitat. Endangered status is appropriate due to its extreme rarity and vulnerability to extirpation from a single catastrophic event. Critical habitat is not being determined for reasons discussed in the following section.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that to the maximum extent prudent and determinable, the Secretary designate any habitat of a species which is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for this species for the following reasons. The Adak population of *Polystichum aleuticum* is sufficiently restricted that unauthorized collecting or vandalism could significantly affect its survival. Publication of critical habitat

descriptions and maps in the Federal Register would increase the likelihood of such activities. Moreover, the population of *P. aleuticum* on Adak is located on a National Wildlife Refuge, Refuge personnel and the Naval Air Station Command have been advised of the presence of the fern and possible management needs, and villagers in Atka are aware that the plant was found there. No other public notification benefits would accrue from designating critical habitat. Since designation of critical habitat could increase the threats facing this species but would not result in any benefits, the Service concludes that designation of critical habitat is not prudent.

Available Conservative Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages additional survey work and conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition (should *P. aleuticum* occur on private land on Atka) and cooperation with the State of Alaska. The Act also requires that recovery activities be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. Examples of Federal activities that could affect alpine areas where the fern occurs include military training exercises, tactical operations involving shelling or detonating devices, or the construction of new facilities such as radar or receiving stations.

Both Adak and Atka Islands are within the Aleutian Islands Unit of the Alaska Maritime National Wildlife Refuge. However, certain lands on Atka have been selected and conveyed to the Atkam Native Corporation under the Alaska Native Claims Settlement Act of 1971. The northern half of Adak Island (including Mt. Reed), though still within the Refuge, is a U.S. Naval Reservation within which the Navy has development rights that can be exercised if compatible with Refuge resources. Immediate measures to protect *P. aleuticum* may entail coordination with the Refuge and Navy to restrict access to the Mt. Reed site, additional surveys to define current range, and fencing to exclude introduced ungulates if new populations are found in terrain accessible to these animals. Future recovery activities may include population biology investigations in support of in vitro cultivation to ensure survival and to allow for reintroduction into secure habitat.

This rule brings sections 5 and 6 of the Endangered Species Act into effect with respect to the Aleutian shield-fern. Section 5 authorizes the acquisition of lands for the purpose of conserving endangered and threatened species. Pursuant to section 6, the Fish and Wildlife Service would be able to grant funds (should they become available) to the State of Alaska for management actions aiding the protection and recovery of the fern.

Listing the Aleutian shield-fern as endangered allows for development of a recovery plan for this plant. Such a plan will draw together the State, Federal, and local agencies having responsibility for conservation of this species. The recovery plan will outline an administrative framework, sanctioned by the Act, for agencies to coordinate activities and cooperate in their conservation efforts. The recovery plan will describe recovery priorities and estimate the cost of various tasks necessary to accomplish them. It will recommend appropriate functions to each agency and a time within which to complete them.

The Act and its implementing regulations found at 50 CFR 17.61, 17.62 and 17.63 set forth a series of general trade prohibitions and exceptions that apply to all endangered plant species. All trade prohibitions of section 9(a)(2)

of the Act, implemented by 50 CFR 17.61, would apply. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to import or export an endangered plant, transport it in interstate or foreign commerce in the course of a commercial activity, sell or offer it for sale in interstate or foreign commerce, or remove it from areas under Federal jurisdiction and reduce it to possession. Certain exceptions can apply to agents of the Service and State conservation agencies. The Act and 50 CFR 17.62 and 17.63 also provide for the issuance of permits to carry out otherwise prohibited activities involving endangered species under certain circumstances. It is anticipated that few trade permits will even be sought or issued since the species is quite small in size and is not common in cultivation or in the wild. Requests for copies of the regulations on plants and inquires regarding them may be addressed to the Office of Management Authority, U.S. Fish and Wildlife Service, P.O. Box 27329, Washington, DC 20038-7329 (202/343-4955).

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined by the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

References Cited

- Christensen, C. 1938. On *Polystichum aleuticum* C. Chr., a new North American species. *American Fern Journal* 28:111-112.
- Friedman, B.F. 1984. Pp. 3.4-4.328 in Feasibility study data collection program for the proposed hydroelectric project at Atka, Alaska. Northern Technical Services, Inc. and Van Gulik and Associates, Inc. Final report prepared for Alaska Power Authority.
- Hulten, E. 1936. New or notable species from Alaska. *Contributions to the flora of Alaska I. Svensk Botanisk Tidskrift* 30:515-528.
- Hulten, E. 1960. *Flora of the Aleutian Islands and westernmost Alaska Peninsula with notes on the flora of the Commander Islands*. 2nd edition, Weinham, Germany. 376 pp.

- Lipkin, R. 1985. Status report on *Polystichum aleuticum* C. Chr. Status report submitted to the U.S. Fish and Wildlife Service. Anchorage, Alaska. 21 pp. and appendices.
- Murray, D.F. 1980. Threatened and Endangered Plants of Alaska. U.S. Forest Service and Bureau of Land Management. Fairbanks, Alaska. 59 pp.
- Smith, D. 1985. *Polystichum aleuticum* from Adak Island, Alaska, a second locality for the species. *American Fern Journal* vol. 75, no. 2.
- Smith, D.K. 1987. *Polystichum aleuticum* Chr. on Adak Island, Alaska: Status report for 1987. Unpubl. manuscript submitted to the U.S. Fish and Wildlife Service. Anchorage, Alaska. 15 pp. and appendices.
- Talbot, S. 1986. A search for *Polystichum aleuticum* (Polypodiaceae) on Adak Island, Alaska: Status report supplement. U.S. Fish and Wildlife Service. Anchorage, Alaska. 21 pp.
- Wagner, D. 1979. Systematics of *Polystichum* in western North America north of Mexico. *Pteridologia* 1:1-64.

Author

The primary author of this proposed rule is Mr. Michael Amaral, Endangered Species Specialist, U.S. Fish and Wildlife Service, 411 West Fourth Avenue, Suite 2B, Anchorage, Alaska 99501 (907/271-4575).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Regulation Promulgation

PART 17—[AMENDED]

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, is amended as set forth below:

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*); Pub. L. 99-625, 100 Stat. 3500 (1986), unless otherwise noted.

2. Amend § 17.12(h) by adding the following, in alphabetical order under Polypodiaceae, to the List of Endangered and Threatened Plants:

§ 17.12 Endangered and threatened plants.

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(h) * * *

Species		Historic range	Status	When listed	Critical habitat	Special rules
Scientific name	Common name					
Polypodiaceae-Fern family:						
<i>Polystichum aleuticum</i>	Aleutian shield-fern	U.S.A. (AK)	E	305	NA	NA.

Dated: January 12, 1988.

Susan Recce,

*Acting Assistant Secretary for Fish and
Wildlife and Parks.*

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